

Public Meeting Briefing

Phase I Remedial Investigation of High Priority Areas of Concern Ravenna Army Ammunition Plant Ravenna, Ohio

September 1997



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Phase I RI of High Priority AOCs - Briefing Scope and Objectives



- Present results of the Phase I Remedial Investigation (RI) conducted at High Priority Areas of Concern (AOCs) at the Ravenna Army Ammunition Plant (RVAAP):
 - Study conducted during 1995-96 by the U. S. Army Corps of Engineers (USACE) and its subcontractor Science Applications International Corporation (SAIC).
 - Work performed in accordance with a Phase I RI Work Plan developed in 1995 by USACE and SAIC, and reviewed for implementation by the Ohio Environmental Protection Agency (OEPA) - Northeast District Office (NEDO).
 - Draft Final Phase I Report issued in May 1997.
 - Copies of the Final Work Plans and Draft Final Phase I RI Report are available for public viewing at Ravenna and Newton Falls Public Libraries.

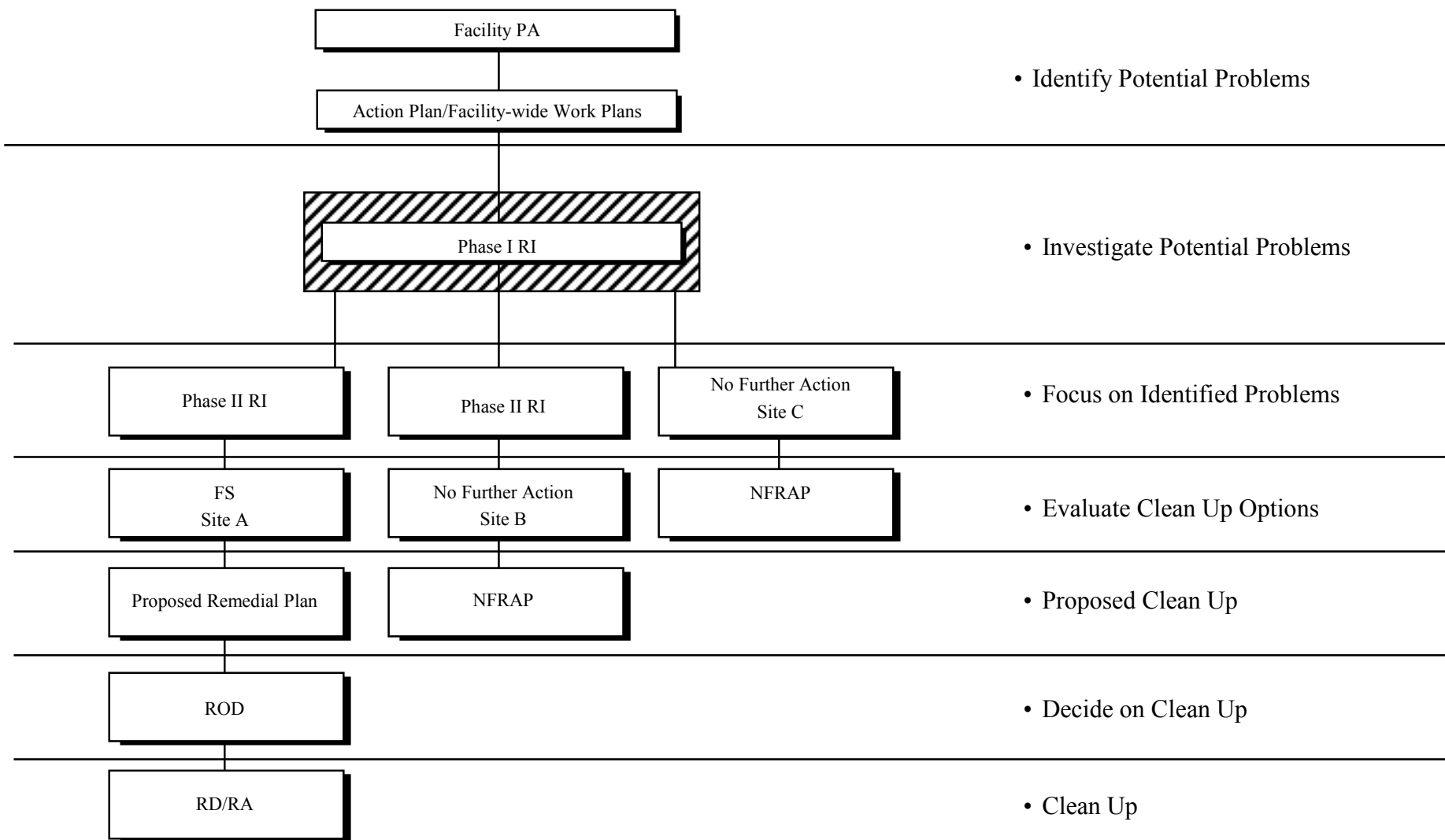
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Phase I RI of High Priority AOCs - RI Approach



Environmental Restoration Approach

What This Approach Means in Practice



- Identify Potential Problems

- Investigate Potential Problems

- Focus on Identified Problems

- Evaluate Clean Up Options

- Proposed Clean Up

- Decide on Clean Up

- Clean Up

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Phase I RI of High Priority AOCs - Objectives of the Phase I RI



- What is a Phase I RI?
 - Investigate potential problem areas.
 - Performed under a regulator reviewed work plan.
 - Collect samples of wastes and earth media (soil, sediment, groundwater, surface water, etc.).
 - Send samples for laboratory analysis.
 - Evaluate analytical results.

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Phase I RI of High Priority AOCs - Objectives of the Phase I RI



- Conclusions drawn from analytical results:
 - Are contaminants present?
 - Identify what contaminants are present.
 - Where are they?
 - Are they potentially moving in the environment?
 - Are they a potential risk to humans, animals, or the environment?
 - What should be done next?

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Phase I RI of High Priority AOCs - Sampling Activities



INVESTIGATIVE SUMMARY - Field Activities

- 15 background surface soil samples
- 321 surface soil samples
- 38 subsurface soil samples
- 9 trench soil samples
- 115 sediment samples
- 19 groundwater samples (monitoring wells and temporary well points)
- geophysical surveys

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Phase I RI of High Priority AOCs - Sampling Activities



INVESTIGATIVE SUMMARY - Laboratory Analysis

- Explosive constituents (e.g., TNT, nitro-based compounds)
- Metals (e.g., Arsenic, Barium, Chromium, Lead, Manganese, etc.)
- Organics (e.g., synthetic man-made chemicals)
 - cleaning solvents
 - petroleum-based additives
- Pesticides/PCBs
 - insecticides, herbicides
 - oil (e.g., transformer and lubricating)

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Phase I RI of High Priority AOCs - Investigation Summary



LOAD LINES 1, 2, 3, 4, AND 12

- Background:
 - Used to assemble munitions
 - Generated large amount of wastewater containing the chemical components of explosive materials
 - Wastewater flowed from process buildings in open ditches to earthen settling ponds
 - Industrial support operations (electricity, steam, machining, equipment service, painting, and storage) at all load lines
 - Demilitarization or disassembly of munitions at Load Lines 1 and 12
 - Load Line 12 (RVAAP-18) wastewater treatment plant

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Phase I RI of High Priority AOCs - Investigation Summary



LOAD LINES 1, 2, 3, 4, AND 12

- Problem:
 - Explosive and metal constituents potentially in sediment, soil, and groundwater associated with:
 - Process buildings
 - Wastewater, ditches, and streams
 - Settling ponds
 - Organics, metals, pesticides/PCBs potentially in soil and groundwater associated with industrial support operations

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Phase I RI of High Priority AOCs - Investigation Summary



LOAD LINES 1, 2, 3, 4, AND 12

- Sampling:
 - 210 surface soil samples adjacent to process buildings
 - 75 sediment samples from ditches, streams, and settling ponds
 - 12 groundwater samples from Load Lines 1, 2, and 12 and along the southeast boundary of the facility

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Phase I RI of High Priority AOCs - Summary of Results



LOAD LINES 1, 2, 3, 4, AND 12 - What Did We Find

- Elevated concentrations of explosives, metals, and organics occur in the central portions of all Load Line areas, particularly around process buildings.
- Explosives and metals detected in drainage ditch and pond sediments, but at much lower concentrations and less frequently than in soils. No evidence found suggesting chemicals are currently exiting settling ponds.

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Phase I RI of High Priority AOCs - Summary of Results



LOAD LINES 1, 2, 3, 4, AND 12 - What Did We Find

- No explosives detected in groundwater at Load Lines 1, 4, or 12. Low concentration of DNT (<1 ppb) detected in one well at Load Line 2.
- Metals detected in groundwater at Load Lines 1, 2, 4, and 12 but may be at naturally occurring concentrations, additional background study is needed to evaluate.
- Organics detected in groundwater at Load Line 1.

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Phase I RI of High Priority AOCs - Investigation Summary



DEMOLITION AREA #2

- Background:
 - used to detonate munitions and bulk explosives for disposal
 - two small burial/disposal areas
- Problems:
 - explosive and metal constituents potentially in soil
 - potential runoff to Sand Creek
 - Unexploded Ordnance (UXO)
- Sampling:
 - 59 soil samples from detonation/disposal areas
 - 3 sediment samples from Sand Creek
 - groundwater monitored under a separate regulatory program

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Phase I RI of High Priority AOCs - Summary of Results



DEMOLITION AREA #2 - What Did We Find

- Low levels of explosive constituents infrequently detected in soils. Several metals frequently detected in surface and subsurface soils at relatively low levels.
- Concentrations of metals in sediment appear to be within background range, and explosive constituents were not detected in stream sediment.
- No explosives or organics were detected in Sand Creek sediments, suggesting movement has not occurred to the points sampled.

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Phase I RI of High Priority AOCs - Investigation Summary



BUILDING 1200

- Background:
 - munitions demilitarization
 - wastewater discharge to settling pond
- Problem:
 - potential explosive constituents in soil, sediment, surface water, and groundwater associated with building, drainage ditch, and settling pond
- Sampling:
 - 2 soil samples adjacent to building exits
 - 7 sediment samples from drainage ditch and settling pond

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Phase I RI of High Priority AOCs - Summary of Results



BUILDING 1200 - What Did We Find

- Metals appear to occur below background ranges.
- Explosive constituents not detected.
- Organics (Acetone) were detected in 1 soil sample. Compound detected is a common laboratory-related contaminant.
- Low concentrations (<1 mg/kg) of explosives were detected in drainage sediments.
- Low levels of explosive constituents (1.1 to 2.2 mg/kg) were detected in the settling pond sediments.

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Phase I RI of High Priority AOCs - Investigation Summary



LANDFILL NORTH OF WINKLEPECK BURNING GROUNDS

- Background:
 - Unlined landfill used for general refuse disposal
 - Possible explosive and munitions waste disposal

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Phase I RI of High Priority AOCs - Investigation Summary



LANDFILL NORTH OF WINKLEPECK BURNING GROUNDS

- Problem:
 - Exact location of burials not known
 - Potential for soil and groundwater contamination from leaching wastes
 - Potential for contaminant movement to adjacent surface water and sediment via groundwater.

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Phase I RI of High Priority AOCs - Investigation Summary



LANDFILL NORTH OF WINKLEPECK BURNING GROUNDS

- Sampling:
 - Geophysical survey to locate burials
 - 9 soil samples from burial area trenches
 - 7 sediment samples from adjacent ditches, streams, and ponds
 - 4 groundwater samples from temporary well points

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Phase I RI of High Priority AOCs - Summary of Results



LANDFILL NORTH OF WINKLEPECK BURNING GROUNDS - What Did We Find

- Explosive constituents were not detected in soil. Low levels of pesticides and PCBs (i.e., <0.1 mg/kg) detected in some samples.
- Scattered detections of metals occurred above background levels in drainage sediments leading to and from the beaver pond north of the landfill.
- No defined source of contamination or evidence of contaminant movement in this area based on locations sampled.

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Phase I RI of High Priority AOCs - Investigation Summary



UPPER AND LOWER COBBS PONDS

- Background:
 - wastewater settling ponds for Load Lines 3 and 12 prior to entry into Sand Creek

- Problem:
 - explosive constituents and metals potentially in sediment, surface water, and groundwater associated with the ponds

- Sampling:
 - 10 sediment samples from ponds and pond outfall
 - 3 groundwater samples from temporary well points

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Phase I RI of High Priority AOCs - Summary of Results



UPPER AND LOWER COBBS PONDS - What Did We Find

- Several metals were detected above background levels, primarily in the center of each pond.
- Explosive constituents (DNT), were detected in one pond sediment sample at a low concentration (<1 mg/kg).
- Manganese was detected in groundwater and sediments adjacent to the stream exiting Lower Cobbs Pond. This may be within naturally occurring levels; additional background study is necessary.

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Phase I RI of High Priority AOCs - Investigation Summary



WINKLEPECK BURNING GROUND

- Background:
 - waste disposal area
 - 70 small earthen pads used to burn explosives, explosive wastes, and domestic trash
 - fuel oil and waste oil commonly used to ignite burns
 - since 1980, all burning conducted at Pad #37

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Phase I RI of High Priority AOCs - Investigation Summary



WINKLEPECK BURNING GROUND

- Problem:
 - potential soil contamination from burning on open ground
 - potential leaching of contamination to groundwater
 - potential runoff to adjacent drainage ditches

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Phase I RI of High Priority AOCs - Investigation Summary



WINKLEPECK BURNING GROUND

- Sampling:
 - 79 surface soil samples
 - 13 drainage ditch sediment samples
 - groundwater monitored under separate regulatory program

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Phase I RI of High Priority AOCs - Summary of Results



WINKLEPECK BURNING GROUND - What Did We Find

- Concentrations of explosive constituents and organics were detected in surface soil at 19 of 70 burning pads and along Pallet Road E, East.
- No explosive constituents or organics were detected in drainage ditch sediments, suggesting movement has not occurred to the points sampled.
- Cadmium and lead were frequently detected above background levels. Other metals may occur within naturally occurring levels; additional background study is needed.